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PARASITIC CRUSTACEA FROM BIMINI, BAHAMAS

By A. S. PEARSE

THIS paper deals with the parasitic copepods, isopods, and barnacles collected from fishes and crustaceans during a month's work (October 13 to November 15, 1948) at the Lerner Marine Laboratory of the American Museum of Natural History at Bimini, Bahama Islands. In all, 368 fishes of 73 species were examined. Of these, 171 individuals (46 percent) of 23 species (31 percent) yielded 290 parasitic copepods, and 140 individuals of 50 species carried none. Of the crustaceans that might be expected to harbor copepods, 10 species were examined; 504 individuals of 4 species harbored 67 copepods, and 129 individuals of 6 species carried none.

Recorded or described herein are 34 species, 17 of which appear to be new. My thanks are due to Dr. C. M. Breder, director of the Lerner Laboratory, and to the resident staff, for the opportunity of making this study, for the facilities furnished, and for help in collecting. I am grateful also to the staff of the United States National Museum, who permitted me to examine Pilsbry's (1907) types of *Octolasmis geryonophila* and *O. americanum*. Paul L. Illg examined the copepod specimens with me and helped me look up rare literature.

Class CRUSTACEA

Order COPEPODA

Suborder HARPACTICOIDA

Family HARPACTICIDAE

Genus ZAUS Goodsir

ZAUS GOODSIRI Brady

Zaus goodsiri BRADY, A monograph of the free and semi-parasitic Copepoda of the British Islands, vol. 2, p. 156, pl. 66, figs. 10–13, 1880.

Two specimens, one a male and the other a female, were taken from a dish in which a squirrelfish, *Holocentrus ascensionis* (Osbeck), was kept for examination. They probably came from the fish.

Family CANTHOCAMPTIDAE

Genus CANCRINCOLA Wilson

CANCRINCOLA JAMAICENSIS Wilson

Cancrinola jamaicensis WILSON, Proc. U. S. Nat. Mus., vol. 44, p. 264, pl. 50, fig. 281; pl. 51, figs. 282, 283; pl. 52, 1913.

Three females were taken from the gills of a crab, *Gecarcinus* sp.; 62 from the gills of 13 land crabs, *Cardisoma guanhumi* Latreille; and 2 from 489 mud crabs, *Panopeus herbstii* H. Milne-Edwards.

Suborder CALIGOIDA

Family CALIGIDAE

Genus ANURETES Heller

ANURETES BREVIS, new species

FIGURE 67

Male.—Carapace a fifth wider than long, posterior angles rounded, lateral lobes reaching to the third thoracic segment and somewhat less than half total length; the lateral and posterior margins finely striate. Fourth thoracic segment one-sixth as long as wide. Genital segment a little more than half as long as wide, with two lateral elliptical areas; each bears at the posterior medial border a narrow lamina armed with four setae. No abdomen. Caudal rami one-third wider than long, triangular and truncate laterally, with three large and four small terminal plumose setae.

First antennae 2-segmented; first segment almost as long as second, armed with 19 setae on the anterior and 3 on the lateral margin; terminal segment bears six apical setae. Second antenna large and stout, the terminal claw armed with a spine and a lateral seta near base; first two segments about as long as claw. Mouth tube conical, wider at base, truncate at tip. Mandible curved at tip and bears about 15 small teeth. First maxilla spinose, bears one small lateral spine and has two setae at base (fig. 67, *d*). Second maxilla slender, bearing a long and a short terminal seta. The furculalike support between the first legs (fig. 67, *e*) is nearly three times as wide as long, the branches short and conical.

The first leg uniramous, with a posterior seta on the basal segment; second segment a third longer than first, setose posteriorly; third segment half as long as second, bearing three hooks and four plumose setae. Second leg biramous; rami 3-segmented; endopod and exopod with rounded laminae on basal segments, that on the

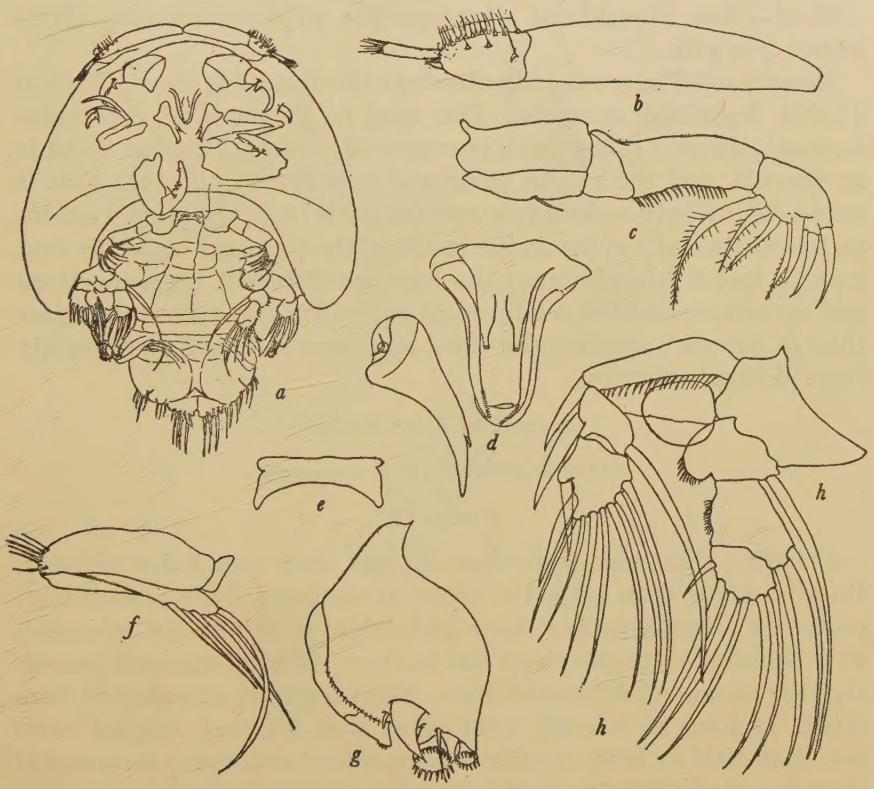

FIGURE 67.—*Anuretes brevis*, new species: *a*, Ventral view of male; *b*, frontal plate and first antenna; *c*, first leg; *d*, mouth tube and first maxilla; *e*, furculalike support between bases of first legs; *f*, fourth leg; *g*, third leg; *h*, second leg.

exterior of the endopod setose, that on the median edge of the exopod smooth; second segment of exopod with two spines and a plumose seta; terminal segment with two spines and seven plumose setae; first segment of endopod with a median plumose seta; second segment setose laterally and with two plumose setae medially; third segment with six plumose setae. Third leg biramous; with a laminate segment that bears a strong hook; exopod 2-segmented; the terminal segment ending in a spinose disc; the endopod 1-segmented and also ending in a spinose disc. Fourth leg 3-segmented; first segment short; second segment almost 20 times as long; third segment one-fourth longer than second, tipped with four long setae. Fifth legs on genital segment are laminate plates with four plumose setae.

Measurements: Body 1.55 by 1.52 mm.; genital segment 0.2 by 0.5 mm.

Female.—Unknown.

Type.—U.S.N.M. No. 88576.

Host.—The sheepshead, *Archosargus probatocephalus* (Walbaum); on gills.

Remarks.—The name indicates that the species is short. Wilson (1905) described no males. This may be the male of *Aneuretes heckelii* Krøyer (1863) or *A. parvulus* Wilson (1913), but there is no furcula, and the mouth parts and legs are so different that it seems desirable to make a new species for it; e.g., the second antenna has a seta and a spine on the inside of the terminal hook, the first maxilla has a lateral spine; the legs are different in proportions and armature, and the caudal rami are wider and more triangular than in Krøyer's species; the third legs terminate quite differently from Wilson's species.

Genus CALIGUS Müller

CALIGUS ASPERIMANUS, new species

FIGURE 68

Female.—Carapace somewhat shorter than remainder of body, slightly wider than long, the sides spreading a little posteriorly; posterior sinuses rather deep and wide; median lobe rounded. Free thoracic segments short and narrow. Genital segment barrel-shaped; about as long as abdomen. First segment of abdomen two-thirds as long as second; anal sinus well marked. Caudal rami less than half as long as second segment of abdomen; terminated by three plumose setae and three short spines, ciliated near tips medially.

Lunule large and prominent. First antennae setose on anterior margins lateral to lunules and near tips posteriorly; terminal segment slender with one claw and several setae. Second antennae small, terminal hook half as long as preceding segment. First maxilla a simple spine with two setae at base. Mouth tube broad, elliptical. Second maxilla slender, terminated by two strong curved setae. Maxilliped is most characteristic and the specific name

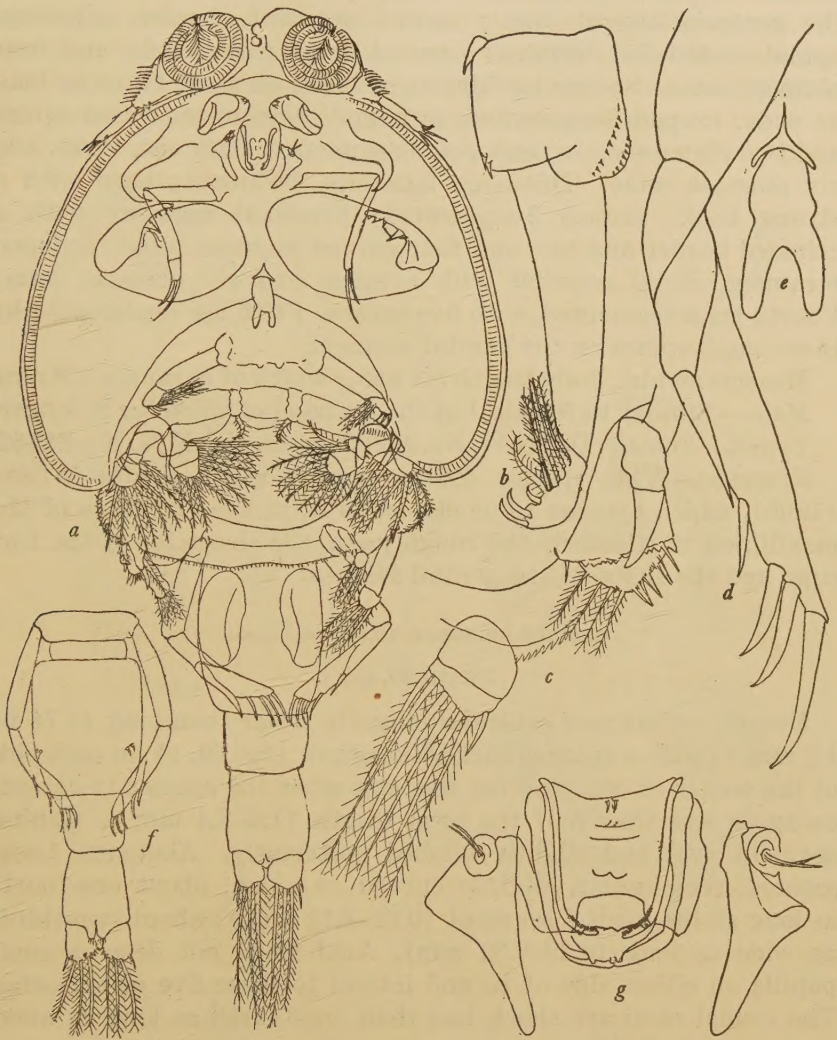

FIGURE 68.—*Caligus asperimanus*, new species: *a*, Ventral view of male. Female: *b*, first leg; *c*, third leg; *d*, fourth leg; *e*, furcula; *f*, posterior end; *g*, mouth tube and first maxillae.

("rough hand") refers to it; the terminal hook is armed midway with a strong, sharp spine, which rests against a nodule on the preceding segment, which is also armed with two short sharp spines near the tip of the hook. Furcula slender with the arms diverging very little, invested anteriorly with tripartite sharp-pointed cap.

First leg uniramous, with a broad basal joint, which bears two rows of spinules anteriorly, and a pair of short, sharp spines on the posterior-lateral angle; second segment slender, tapering, spinulose distally; terminal segment bears three hooks and four plumose setae. Second leg biramous, basal segment twice as long as wide; exopod 3-segmented, proximal segment with two spines and two plumose setae; endopod 3-segmented, with one, three, and six plumose setae. Third leg lamellate, biramous; base with a strong hook; exopod 2-segmented; proximal segment with a crinkled border and two and four curved plumose setae; endopod biramous, distal segment with a spine and six plumose setae. Fourth leg 4-segmented, with five spines. Fifth leg represented by three small spines on the genital segment.

Measurements: Body length 3.3 mm.; width of carapace 1.9 mm.

Male.—Similar to female, but the endopod of third leg is longer.

Types.—Female, U.S.N.M. No. 88563; male, U.S.N.M. No. 88562.

Remarks.—This species differs from *Caligus bonito* Wilson (1905), which appears to be closest to it, in the armature of the maxilliped, particularly the rough palm, the character of the furcula, and the shape of the genital segment.

CALIGUS SPINOSURCULUS, new species

FIGURE 69, *a–c*

Female.—Carapace orbicular, slightly wider than long (1.78 by 1.6 mm.); with a spinous suckerlike organ (fig. 69, *c*) on each side at the posterior end, and for this character the species is named; carapace less than half the total length (1.6–3.4 mm.). Genital segment oval and slightly bilobed posteriorly. Abdomen 1-segmented, rectangular, slightly curved on sides; about one-fourth as long as the genital segment (0.32–1.12 mm.); about two-thirds as wide as long (0.22–0.32 mm). Anal sinus not deep, a small papilla on either side of it, and lateral to these five or six setae. The caudal rami are short, less than one-fourth as long as abdomen; armed with four plumose setae.

Lunules shallow and small; first antennae not prominent; terminal segment slender. Second antenna small and slender; middle segment spinulose. First maxilla with a small medial spine near its middle, two setae at base. Second maxilla slender, terminated

by two curved setae. Maxilliped stout, with a short spine near base of second segment. Mouth tube rectangular, with rounded corners. Furcula small and short, the arms curved inward slightly; blunt process at each anterior angle.

First and second legs normal for caligids. Third leg with flat base that is crossed by a longitudinal row of spinules and bears a circular disc near its median border that has 9 or 10 short spines on its border and one or two in its interior; the endopod bears a hook that is smaller than the one on the basipod. The fourth leg has five very short spines near the tip and the three terminal segments are short. The fifth leg is represented by three spines at the posterior-lateral margin of the genital segment.

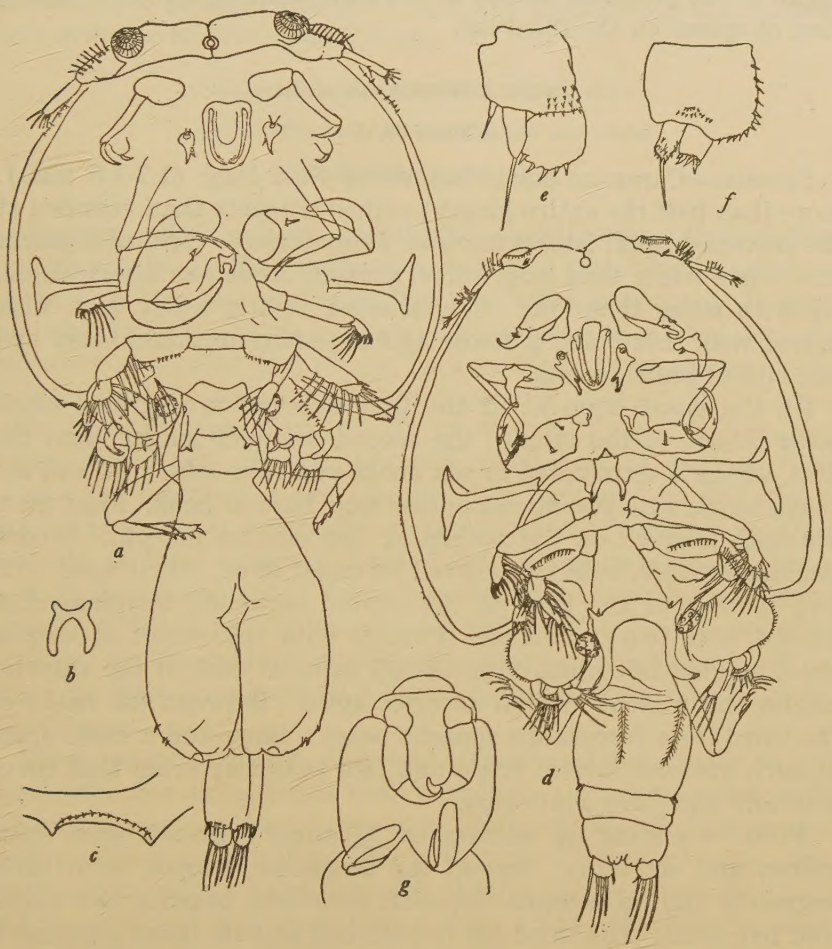

FIGURE 69.—*a–c, Caligus spinosurculus,* new species: Female: *a,* Ventral view; *b,* furcula; *c,* spiny sucker at posterolateral angle of carapace; *d, Caligus germoi,* new species: Ventral view of male; *e–g, Lernanthropus amplitergum,* female: *e,* First leg; *f,* second leg; *g,* ventral view of cephalothorax.

Male.—Unknown.

Type.—U.S.N.M. No. 88566.

Hosts.—A single female was taken from a gill of a yellow jack, *Caranx bartholomaei* (Cuvier and Valenciennes). Another female was collected from a gill of a common jack, *Caranx hippos* (Linnaeus). A mutilated specimen that appears to belong to this species came from a gill of a rock hind, *Epinephelus adscensionis* (Osbeck).

Remarks.—This species differs from *Caligus bonito* Wilson (1905) and *C. isonyx* Steenstrup and Lutken (1861) in the shape and length of the genital segment, in the short spines at the tip of the fourth leg, and in possessing a peculiar spinulose suckerlike organ at the posterior angles of the carapace and a sucker with a ring of spines on the third leg.

CALIGUS GERMOI, new species

FIGURE 69, *d*

Female.—Carapace somewhat wider than long (1.7-1.5 mm.), more than half the entire length; rather truncate than rounded at the posterior ends; lateral margins finely striate. Genital segment one-fourth wider than long, barrel shaped. Abdomen 2-segmented, one-fifth wider than long. Caudal rami slightly wider than long, armed with three long plumose and one short terminal setae and one lateral plumose seta.

On the basal segment of the first antenna are several small setae lateral to the lunule; the second segment longer than the first, which is terminated by six hooks and four setae. Second antenna stout, with two strong spines near base of hook. First maxilla with a spine on the middle of the median margin. Second maxilla, slender, with two curved terminal setae. Maxilliped with two setae near the base of the second segment; terminal claw curved, with two stout setae. Furcula with base about as long as the divergent branches, with a small spine at each of the anterior angles and a stout median anterior spine. Between the bases of the third leg a furculalike support bears a large and a small spine at each anterior lateral angle and two posterior arms that curve laterally and have acute tips.

First swimming leg uniramous; terminal segment bears three spines and six setae. Second leg biramous; exopod with three segments and its terminal segment lamellate, bearing two spines and five setae. The third leg is flattened and its basal segment is fringed with minute setae and bears a strong posterior hook; on its median margin is a sucker with five stout spines about its margin; a 1-segmented, setose exopod and a 2-segmented endopod

are present toward the median line from the hook. The fourth leg bears five terminal spines. Fifth leg represented by two short spines at the posterior end of the genital segment.

Measurements: Body length 1.7 by 2.6 mm.; genital segment 0.5 by 0.4 mm.

Male.—Unknown.

Type.—U.S.N.M. No. 88569.

Host.—A single female was taken from a gill of a finned albacore, *Germo alalunga* (Gmelin).

Remarks.—This species differs from all the others in the genus in having feebly developed lunules, in the size and the distribution of the spines on the second antennae and maxillae, the character of the furcula, the presence of a characteristic furculalike support between the bases of the third legs, and a sucker on each side of this armed with five stout spines.

Genus LERNANTHROPUS Blainville

LERNANTHROPUS AMPLITERGUM, new species

FIGURES 69, *e–g*; 70, *a*; 71

Female.—Body robust; dorsal plate slightly wider than regions anterior to it. Cephalothorax covered by a plate that is indented posteriorly and has a wide median projection anteriorly. In more mature individuals the posterior indentation is deeper and the sides are straighter (fig. 69, *g*), because they are turned ventrally. Second thoracic segment is almost as wide as the cephalothorax, with curved lateral margins. Third segment longer than second, wider posteriorly. Fourth segment about half as wide as third where the fourth legs are attached but bearing rounded conical lateral projections anteriorly. Genital segment less than one-third as wide as third segment. Caudal rami reach near the posterior end of the dorsal plate; slender, cylindrical. Fourth legs extend one-third their length beyond dorsal plate, which is wide and often indented in the midline posteriorly. Egg strings extend half or more of their length beyond dorsal plate; contain 42–42, 33–39, 64–71 eggs.

First antennae concealed beneath front and not visible in any specimen. Second antenna with a sharply curved terminal hook, which has a stout short spine near its base. Mouth tube conical with a wide base. First maxilla with 2 short terminal setae. Second maxilla with a terminal hook that is spinulose on the inside of its curve and is preceded by a stout spine. Maxillipeds stout, with terminal hook slightly curved.

First leg with spinulose basipod; exopod tipped with five strong spines; endopod with a long terminal seta; medial to this is a strong seta. Second leg with a spinulose basipod; exopod ends in a spinulose disc; endopod spinulose, with a single seta. Third leg uniramous, flat, lamellate. Fourth leg biramous; rami slender, tapering, rounded at tips, more than four times as long as base, extending one-third their length beyond dorsal plate. Fifth legs uniramous, cylindrical, one-tenth as long as fourth leg, extending diagonally back on each side of genital segment.

Measurements: Length 2.5–3.3 mm.

Male.—Like female but without a dorsal plate, smaller, and with the third legs with two slender rami instead of being flat plates. First antennae 5-segmented. Caudal rami with three spines on lateral margins.

Measurements: Length 1.8 mm.; width of carapace 0.52 mm.

Type.—U.S.N.M. No. 88548.

Hosts.—Three females were taken from the gills of porkfish,

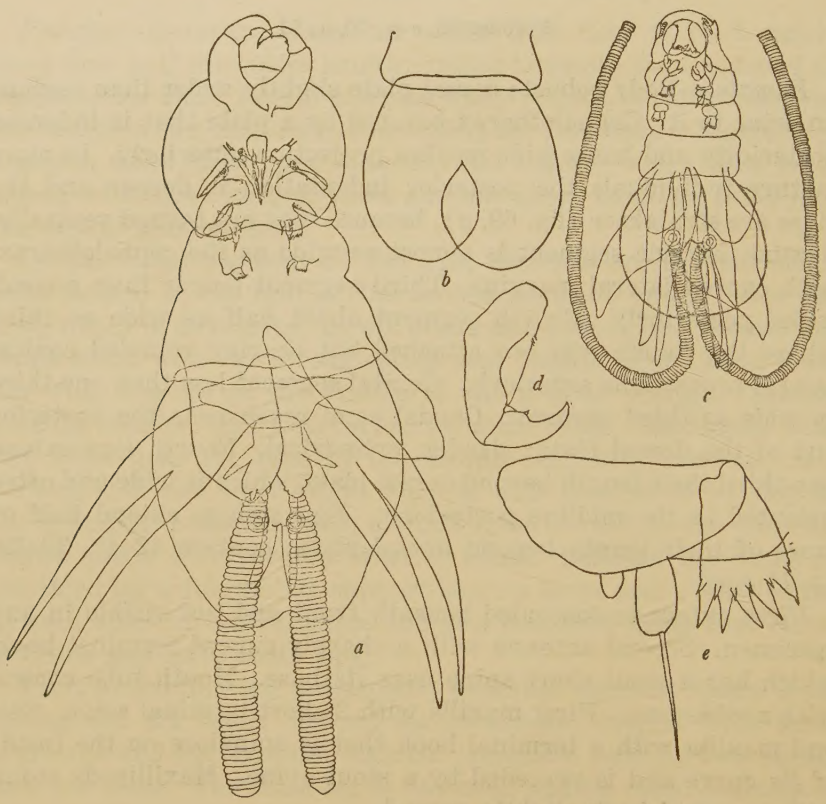

FIGURE 70.—*Lernanthropus amplitergum*, new species: *a*, Ventral view, female; *b–e*, *Lernanthropus bifidus*, female: *b*, Dorsal plate; *c*, ventral view of entire female; *d*, second antenna; *e*, first leg.

Anisotremus virginicus (Linnaeus), eight from the gills of margatefish, *Haemulon albidum* Cuvier and Valenciennes, three from the blue-striped grunt, *Haemulon sciurus* (Shaw), and nine from the barred grunt, *Conodon nobilis* (Linnaeus). One male was collected from a gill of a margatefish.

Remarks.—This species is like Wilson's (1913) *L. fondeus* and *L. spiculatus*. It differs from the former in the size of the dorsal plate and from the latter in the lack of frontal lobes and the shape and the armature of the mouth parts and legs. It differs from Steenstrup and Lutken's (1861) *L. konigii* in the shape of the cephalothorax and the dorsal plate, in the shape of the abdomen, and the smaller size of the fifth legs. It is unlike Heller's (1868) *L. lativentris* in the shape and the size of the dorsal plate and the cephalothorax; and from his *L. nobilis* in the same manner. The name refers to the wide dorsal plate.

LERNANTHROPUS BIFIDUS, new species

FIGURES 70, *b–e*; 72, *a–d*

Female.—Color cinnamon-brown. General form rather stocky. Cephalothorax longer than wide, with two lateral anterior lobes, the anterior one-half narrower than the posterior. Next two segments separated by distinct dorsal and lateral grooves. Dorsal plate is cleft through half its length (hence the name, *bifidus*) and the lateral lobes overlap somewhat; about as wide as long; wider than preceding segments. Abdomen and genital segment wider

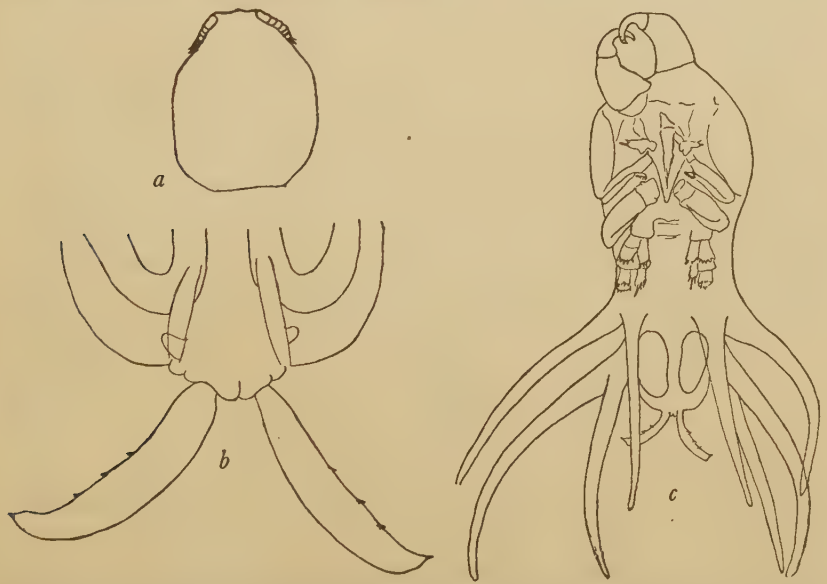

FIGURE 71.—*Lernanthropus amplitergum*, new species, male: *a*, Cephalothorax, dorsal view; *b*, posterior end; *c*, ventral view of body.

than long. Egg strings longer than the body, the right one, though incomplete, containing 204 eggs. Caudal rami leaflike, acutely pointed, and longer than the abdomen and genital segment combined.

First antennae partly concealed by lateral lobes, apparently 6-segmented; basal segment widest. Second antenna stout; terminal claw half as long as preceding segment, with a short blunt spine near its base. Second maxilla small, partly concealed by lateral lobes. Maxilliped smaller than second antenna.

First and second legs biramose; rami 1-segmented. First leg with elliptical endopod and with one long terminal seta; exopod bearing five stout spines and smaller spines between these. Second leg with one long endopod and several shorter setae, ciliated along

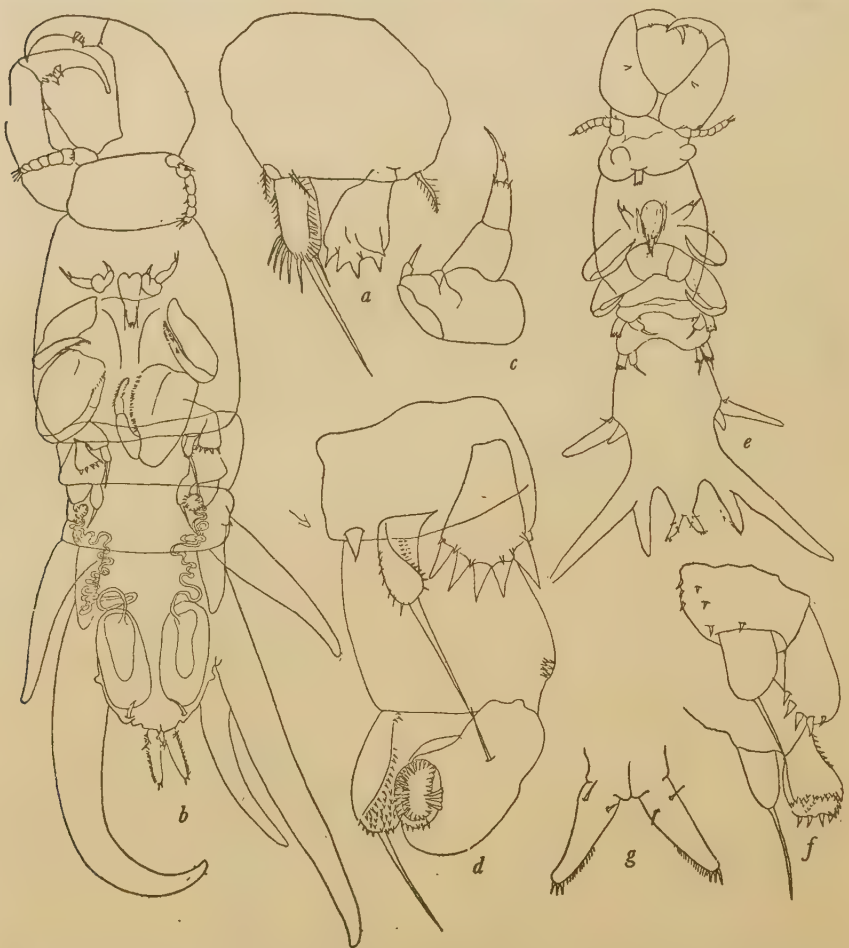

FIGURE 72.—*a–d, Lernanthropus bifidus,* new species: *a,* Second leg of female; *b,* ventral view of entire male body; *c,* first maxilla; *d,* first and second legs; *e–g, Lernanthropus hiatus,* male: *e,* Ventral view; *f,* first and second legs; *g,* caudal rami.

margins; exopod with four strong terminal spines and others on posterior surface. Third legs flat, biramous; exopod rhomboidal, endopod three times as long and pointed. Fourth legs narrower, biramous. Legs 3 and 4 extend beyond dorsal plate posteriorly.

Measurements: Length 4.8 mm.

Male.—Cephalothorax slightly wider and almost as long as the remainder of the body; both ends squarely truncated. Genital segment slightly narrower than preceding with two red spermathecae and two setae just posterior to them. Caudal ramus four times as long as wide, setose on lateral margins, bearing two short terminal setae, and two ventrally near the base.

First antennae 6-segmented. Second antennae longer and stouter than that of female; with two stout spines on hook near its base and several minute spines between these. First maxilla with two terminal setae and some smaller terminal setae, also a basal seta. Second maxilla with hook, spinulose near tip and bearing two larger spines. Maxilliped stout, spinulose along margin of penultimate segment opposite terminal hook, with a spine near tip of hook.

First leg with the exopod bearing five spines; endopod setose on margins and ending in a long seta. Second leg with exopod ending in a spinulose sucker; the endopod setose medially on basal segment and bearing a long terminal seta. Third leg biramous, endopod about one-third as long as exopod and mostly dorsal to the genital segment. Right fourth leg uniramous (an abnormality) and left leg biramous; the endopod three-fifths as long as exopod; the whole leg extends half its length beyond the caudal rami.

Measurements: Length 2.2 mm.

Types.—Female, U.S.N.M. No. 88640; male, U.S.N.M. No. 88542.

Host.—Two females and a male were taken from the gills of muttonfishes, *Lutianus analis* (Cuvier and Valenciennes).

Remarks.—This species resembles Wilson's (1932) *L. longipes*, but it has the posterior dorsal plate of the female more deeply cleft; the fourth legs as not so long as in that species. The armature of the appendages also differs considerably. This species is much smaller.

LERNANTHROPUS HIATUS, new species

FIGURE 72, *e–g*

Male.—Body short (1.7 mm.); cephalothorax nearly half as long as remainder of body. The caudal rami do not reach as far back as the endopod of the fourth leg; they are armed above with small setae near their bases and tipped with three small setae.

First antenna 6-segmented. Second antenna stout, the terminal hook bearing two small spines and the preceding segment with one short spine. Mouth tube slender, triangular. First maxilla with two stout terminal setae, one of which is three times the length of the other; wide space (0.25 mm.) between the antennae and the first maxillae. Second maxilla about two-thirds as large as maxilliped; hooks of both smooth.

First leg with basipod with several acute spines, with 1-segmented exopod that bears five terminal spines; endopod with a long terminal seta. Second leg with exopod terminating in a sucker armed with large and small spines; endopod with one terminal seta. The posterior part of the body shows no evidence of segmentation. The third legs have an endopod which is less than one-fourth as long as the exopod; that of the fourth leg is less than half the length of the exopod.

Female.—Unknown.

Type.—U.S.N.M. No. 88560.

Host.—A single male taken from the gills of the long-finned albacore, *Germo alalunga* (Gmelin).

Remarks.—This male differs from other species in the genus in having a very wide space between the antennae and the mouth tube and the first maxillae (hence the name *hiatus*), in the arrangement of spines on second antennae, and in the arrangement of the setae on the caudal rami. It appears to be closest to Steenstrup and Lutken's (1861) *L. konigii* but it differs from that species in the more slender body, especially in the fewer segments in the first antenna, the spines on the second antenna, and the spinous sucker on the exopod of the second leg.

LERNANTHROPUS SPICULATUS Wilson

Lernanthropus spiculatus WILSON, Proc. U. S. Nat. Mus., vol. 44, p. 233, pl. 38, figs. 185–189, 1913.

One female was taken from a gill of a lane snapper, *Lutianus synagris* (Linnaeus).

LERNANTHROPUS LONGILAMINA, new species

FIGURE 73

Female.—Body stocky, the dorsal plate wider and longer than remainder of body. Two prominent lateral lobes at anterior end, which cover the extended second antennae almost to the hooks (fig. 73, *d*), two deep lateral constrictions behind the cephalothorax. Egg strings projecting a little beyond the dorsal plate, in the type bearing 50 and 51 flat eggs.

First antenna 6-segmented, hidden beneath head lobes. Second antenna large and strong; terminal hook sharply bent, two small spines near its middle. First maxilla ciliate at tip and bearing one seta at base. Mouth tube slender and triangular. Second maxilla less than half as large as maxilliped; the latter spinulose where its terminal hook meets the preceding segment.

First leg with a somewhat spinulose basipod; exopod with five terminal spines; endopod with a setose margin and a long terminal seta. Second leg with a spinulose tip on the exopod and a single seta on the endopod. Third leg flat, biramose, and extended ventrally or laterally; rami unsegmented, wider at tip than at base, and truncate. Fourth leg with two short, cylindrical, tapering rami not quite reaching end of dorsal plate, lateral ramus ending in a short, sharp, laterally directed spine. Genital segment twice

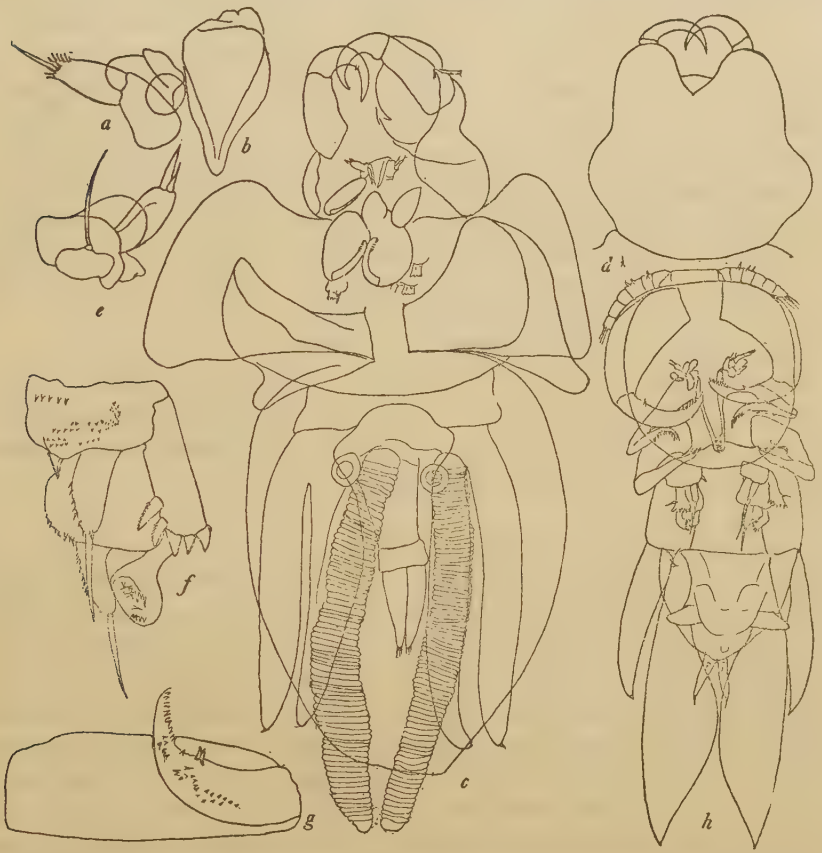

FIGURE 73.—*Lernanthropus longilamina*, new species: Female: *a*, First maxilla; *b*, mouth tube; *c*, ventral view; *d*, dorsal view of cephalothorax and second antennae. Male: *e*, First maxilla; *f*, first and second legs; *g*, maxilliped; *h*, ventral view.

as wide as long, with rounded lateral angles, wider in front than behind. Abdomen 2-segmented; first segment three times as long as wide; second segment one-fourth as long as first. Caudal rami slender, tapering, twice as long as genital segment; tipped with three short setae.

Measurements: Length, 3 mm.

Male.—Front of head straight, without lobes. Cephalothorax slightly wider and shorter than remainder of body, from which it is sharply separated laterally by incisions; covered dorsally by an elliptical plate. Second to fourth thoracic segments wider than genital segment, which is about as long as the remainder of the thorax. Anal papillae setose, as are the caudal rami distally.

First antenna 6-segmented; at front of head. Second antennae larger than those of female; terminal hook curved, spinulose at tip. Mouth tube long and slender. First maxilla with a long basal seta and 2 terminal setae. Second maxilla with spinulose terminal hook. Maxilliped slender, not much larger than second maxilla.

First legs spinulose on basipod; exopod with five terminal spines; endopod setose on median border, with one terminal spine. Second legs with exopod ending in a circular spinose disc; the basipod and endopod setose medially, the latter with a single terminal spine. Third and fourth legs flat, uniramous, leaflike, with pointed tips; the fourth about twice as long as the third, extending far beyond the caudal rami, which are slender, one-fourth as long as the fourth legs, and tipped with a single seta.

Measurements: Length, 2.2 mm.

Types.—Female, U.S.N.M. No. 88555; male, U.S.N.M. No. 88556.

Hosts.—Three females and one male taken from the gills of sheepshead, *Archosargus probatocephalus* (Walbaum), and seven females from the saucer-eyed porgy, *Calamus calamus* (Cuvier and Valenciennes).

Remarks.—This species is like Wilson's (1922) *L. chlamydotus* and *L. penulatus* in having a long dorsal plate, but it differs from them in having frontal lobes in the female, in the shape of the dorsal plate, and in the shape and armature of the mouth parts. The frontal lobes are like those of *L. caudatus*, but the dorsal plate is quite different from that species. It most closely resembles *L. pagelli* Krøyer (1863), but it differs in the greater spinosity of the mouth parts, the shape of the male and female abdomens, and caudal rami. It also resembles *L. pupa* Burmeister (1833), but it differs in the armature of the mouth parts, in the character of the first maxillae, the armature of the exopod of the second legs, and the caudal rami, and in its smaller size.

Family DICHELESTHIIDAE

Genus HATSCHEKIA Poche

HATSCHEKIA ALBIRUBRA Wilson

Hatschekia albirubra WILSON, Proc. U. S. Nat. Mus., vol. 44, p. 239, pl. 41, figs. 209–215, 1913.

Five females were taken from the gills of gray snappers, *Lutianus griseus* (Linnaeus).

HATSCHEKIA OBLONGA Wilson

Hatschekia oblonga WILSON, Proc. U. S. Nat. Mus., vol. 44, p. 242, pl. 42, figs. 222–226, 1913.

Six females were collected from the gills of gray snappers, *Lutianus griseus* (Linnaeus), and one from a gill of a schoolmaster, *L. apodus* (Walbaum).

HATSCHEKIA LINEARIS Wilson

Hatschekia linearis WILSON, Proc. U. S. Nat. Mus. vol. 44, p. 246, pl. 44, figs. 240–246, 1913.

Twenty-six females came from the gills of margatefishes, *Haemulon album* Cuvier and Valenciennes; 11 from blue-striped grunts, *H. sciurus* (Shaw); and 15 from barred grunts, *Conodon nobilis* (Linnaeus).

HATSCHEKIA INSOLITA Wilson

Hatschekia insolita WILSON, Proc. U. S. Nat. Mus., vol. 44, p. 245, pl. 42, figs. 227–232, 1913.

A female came from a gill of a rock hind, *Epinephelus adscensionis* (Osbeck).

HATSCHEKIA ANGULATA, new species

FIGURE 74, *a–g*

Female.—Sides of head produced into triangular, rounded lobes. Body behind head triangular, widest near the front, anterolateral angles rounded; posterior end truncate with rounded angles; two segments indicated by lateral indentations and cross divisions. Carapace widest in the middle, constricted somewhat just behind middle; posterior margin rounded at corners and slightly indented in middle. Genital segment and abdomen fused. Lobes at sides extend beyond abdomen. Caudal rami minute and armed with a single seta. Eggs large, 9–11, 15–16 in a string.

First antenna 6-segmented, sparsely setose. Second antenna has terminal hook with a swollen base. Mouth tube slightly wider than long. Maxilliped slender, with a double terminal hook.

Legs close together; not visible in dorsal view; arising from narrow ventral laminae. First leg with one spine on basipod and two spines on terminal segment; endopod with four apical spines; endopod with one spine on proximal segment and three on distal segment. Second leg with one spine on proximal segment of exopod and three on distal segment; endopod with one spine on basal segment and four on distal segment.

Measurements: Whole body 0.6 mm.; head 0.15 mm.; thorax and abdomen 0.58 mm.; width of whole body 0.9 mm.; head 0.3 mm.; thorax 0.4 mm.

Male.—Unknown.

Type.—U.S.N.M. No. 88518.

Hosts.—Six females were taken from the gills of the black angelfish, *Pomacanthus arcuatus* (Linnaeus) and three from the French angelfish, *P. paru* (Bloch).

Remarks.—This species resembles Wilson's (1913) *H. uncata* and *H. insolita*, but it differs in the shape of the head, the length of the caudal rami, the greater number of eggs in the egg-strings, the double hook at the distal end of the maxilliped, and the shape of the body.

HATSCHEKIA PARVA, new species

FIGURE 74, *h–k*

Female.—Head a little wider than remainder of body (0.17–0.14 mm.) and about one-fourth as long, truncate and with median notch in front, tapered a little and rounded behind. First and second legs in plain view, as they protrude laterally. Eggs large, 4–6 in a string.

First antenna 3-segmented and somewhat setose. Second antenna long, constricted at the proximal third of its basal joint; terminal hook sharply bent at its distal third and sharp. Mouth tube far back on head behind bases of maxillipeds, rectangular with rounded corners, slightly longer than wide. First maxilla small, with one short seta. Maxillipeds with wide second segment, a narrow segment distal to that, and a short slightly bifid terminal hook.

Both pairs of legs are biramous. First leg with exopod 2-segmented and armed with two plumose setae; endopod 2-segmented, with two setae on the tip of the distal segment. Second leg with both rami 2-segmented; each segment of the exopod has one ter-

minal seta; the second segment of the endopod bears one long and one short seta. The caudal rami are indented on the median-distal angle, bear two terminal setae and are about one-tenth the length of the postcephalic body. The egg strings are not attached directly to the genital segment but are appended to strings.

Measurements: Length 0.72 mm.

Male.—Unknown.

Type.—U.S.N.M. No. 88529.

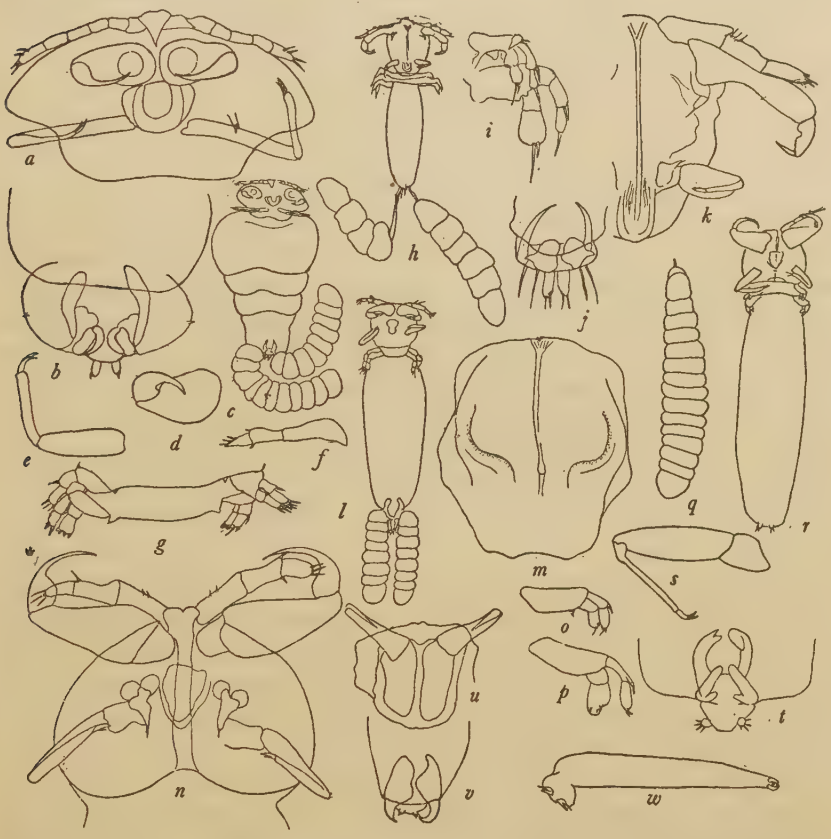

FIGURE 74.—*a-g, Hatschekia angulata,* new species, female: *a,* Ventral view of head; *b,* posterior end; *c,* ventral view of body; *d,* second antennae; *e,* maxilliped; *f,* first antenna; *g,* first and second thoracic segments with legs. *h-k, Hatschekia parva,* new species, female: *h.* Ventral view; *i,* first and second legs; *j,* posterior end; *k,* ventral view of left side of head. *l-m, Hatschekia exigua,* new species: *l,* Ventral view of female; *m,* dorsal view of cephalothorax. *n–t, Hatschekia amplicapa,* new species, female: *n,* Ventral view of head; *o, p,* first and second legs; *q,* egg string; *r,* female ventral view; *s,* maxilliped; *t,* posterior end. *u-w, Hatschekia* sp., female: *u,* Ventral view of head; *v,* posterior end; *w,* whole body.

Host.—Three females, one with egg strings, were taken from the gills of a hogfish, *Lachnolaimus maximus* (Walbaum).

Remarks.—This species is quite different from *H. linearis,* which Wilson (1913) described from the hogfish. It more nearly resembles his *H. iridescens,* but it also differs from that species in shape of the head, the shape of the second antennae, the position and armature of the swimming legs, the shape and armature of the caudal rami, and the nature of the egg strings. The shape of the head and the second antenna are like those of *H. pygmaea* T. and A. Scott (1913), but the setation of caudal rami, antennae, and legs differ, as does the number of eggs.

HATSCHEKIA EXIGUA, new species

FIGURE 74, *l, m*

Female.—Head about one-fourth of total length, slightly narrower than body, with lateral margins expanded into low blunt lobes somewhat posterior to the middle. First two segments of thorax narrower than regions anterior and posterior to them and very short. First and second legs visible at sides of body. Cephalothoracic plate almost straight with a shallow antero-median notch, two lateral protuberances just anterior to the middle, and an incurved posterior margin. Postcephalothoracic portion of body without any trace of segmentation, widest at the anterior third, sharply tapered at the posterior end. Caudal rami minute, more than twice as long as wide, with one long and three short terminal setae.

First antenna 3-segmented, with 0, 2, and 4 setae. Second antenna with basal segment narrow in its middle; terminal hook large at base, sharply bent, and acute. Mouth tube in front of maxillipeds, wider at base. Maxillipeds with second segment wide, with curved margins; distal segment slender, with a terminal spine that has a serrate margin.

First legs biramous, with slender rami. Second legs biramous; basipod with a terminal seta; exopod 2-segmented, with a long and a short terminal seta; endopod 2-segmented, with a terminal circle of about seven short spines. Eggs large, 8–10 in a string.

Measurements: Length of body 0.93 mm.; length of cephalothorax 0.21 mm.

Male.—Unknown.

Type.—U.S.N.M. No. 88531.

Host.—Three females were taken from the gills of a squirrelfish, *Holocentrus ascensionis* (Osbeck).

Remarks.—This species resembles *H. oblonga* Wilson (1913), but it differs in the smaller number of segments in the first an-

tenna, in the shape of the cephalothorax, second antennae, and maxillipeds, in the smaller body, in the well differentiated first and second thoracic segments. It also resembles somewhat *H. parva,* described in this paper, but it differs from that species in the shape of the cephalothorax, in the shape of the posterior end, in the extent to which the first and second legs protrude laterally, in the comparative width of the cephalothorax and the rest of the body, in having smaller second antennae, and in the more anterior position of the mouth tube. It differs from *H. harkema* Pearse in the shape of the head, in the position and armature of the second antennae, legs, and caudal rami. The shape of the head and body are somewhat like those of *H. longibrachium* Yamaguti (1939), but the first antennae, caudal rami, and legs differ in their setation. The species is named *exigua* because of its small size.

HATSCHEKIA AMPLICAPA, new species

FIGURE 74, *n–t*

Female.—Carapace wider than long, rounded in front, indented behind, a little wider than remainder of body. No neck, sides of body nearly parallel and posterior almost as wide as anterior. Posterior end truncate with caudal rami little longer than wide and armed with four setae. The legs are visible at the sides of the thorax.

First antenna 3-segmented, rather stout; basal segment with two minute spines, second with two setae; third with four terminal setae. Second antenna large, terminal hook with large base, slender acute tip, and no accessory spines. Mouth tube rather far forward, wider at the anterior end. First maxilla a simple spine with a bilobed base. Maxilliped slender, with double terminal hooks.

First leg biramous; exopod 2-segmented, terminal segment tipped with three short spines; endopod 2-segmented with a long and a short terminal spine; a small seta is present medial to the endopod. Second leg biramous; first segment of exopod with terminal spine, terminal segment with a long and a short seta; endopod 2-segmented, terminal segment broad and armed with three very minute spines. One egg string contains 16 large eggs.

Measurements: Length 1.0–1.3 mm.; width of carapace 0.26 mm.; width of body 0.24 mm.

Male.—Unknown.

Type.—U.S.N.M. No. 88602.

Host.—Eight females were taken from the gills of the great barracuda, *Sphyraena barracuda* (Shaw).

Remarks.—This species resembles somewhat Wilson's (1913) slender *Hatschekia oblonga,* but it differs in the absence of a neck, the shape of the carapace, the armature of the legs, the length of the caudal rami, and in having double hooks on the maxillipeds.

HATSCHEKIA species

FIGURE 74, *u–w*

Female.—Two specimens were taken from the gills of a rock beauty, *Holocanthus tricolor* (Bloch), but both are so mutilated that it does not seem proper to assign to them a specific name.

Body slender, about seven times as long as wide. Frame for head rectangular. Second antenna with basal segment growing smaller distally; terminal hook curved and sharp pointed. Caudal rami minute, rough tipped and bearing one small seta; smaller than hooks on either side of them.

Measurements: Length 1.0 mm.; width 0.15 mm.

Male.—Unknown.

Remarks.—This species appears to differ from others in the genus in its minute caudal rami and the large hooks lateral to them.

Family EUDACTYLINIDAE

Genus KRØYERIA Beneden

KRØYERIA SPATULATA Pearse

Krøyera spatulata Pearse, Journ. Elisha Mitchell Sci. Soc., vol. 64, p. 127, figs. 1–10, 1948.

Two females came from the gills of a sand shark, *Carcharias littoralis* (Mitchill).

Genus NEMESIS Risso

NEMESIS PILOSUS, new species

FIGURE 75

Female.—Cephalothoracic carapace elliptical, slightly longer than wide, pilose throughout ventral surface. First free thoracic segment a little longer than the two following, which are about the same length, each segment completely covered dorsally by a plate that overlaps the one behind it a little and laterally is somewhat enlarged and curved ventrally. The fifth segment is narrower than those preceding it; nearly twice as wide as long; dorsal plate does not extend laterally and hence does not curve ventrally. Genital segment not quite so long as and two-thirds as wide as fifth segment. Abdomen 3-segmented; first segment widest, first and

second about equal in length, shorter than third, caudal rami twice as long as wide, elliptical, with five terminal setae. Egg strings much longer than body, containing 66 and 72 eggs.

First antenna 14-segmented, the basal and distal segments longest. Second antenna small, with a long seta on the basal segment, which is two-thirds as long as the second segment; terminal hook with a swollen base that bears a seta, and two low tubercles on the inner margin. Second maxilla stout, with a short, strong, setose terminal hook. Maxilliped very large, terminal hook sharply bent near tip and bearing two short spines on inner margin.

Second leg biramous and rami 2-segmented; exopod with two setae on proximal segment, and six on the end of the distal; endopod with a spinulose distal margin on proximal segment, and two

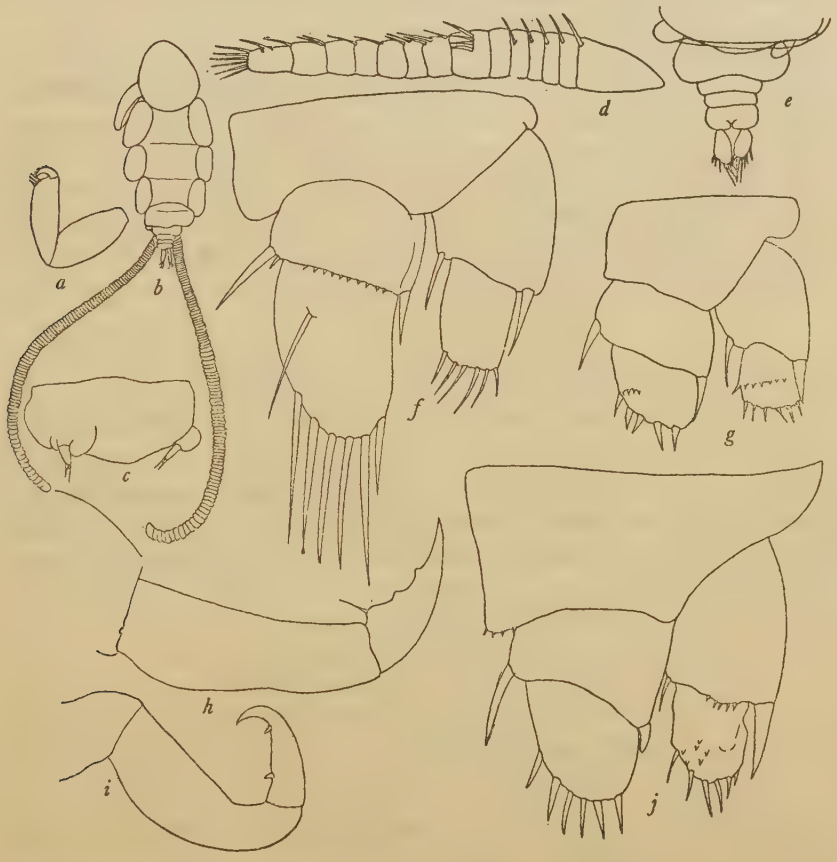

FIGURE 75.—*Nemesis pilosus*, new species, female: *a*, Second maxilla; *b*, dorsal view of body; *c*, genital segment and fifth legs; *d*, first antenna; *e*, posterior end; *f*, second leg; *g*, fourth leg; *h*, second antenna; *i*, maxilliped; *j*, third leg.

setae, distal segment, with one surface and six terminal setae. Third leg much like second but with shorter setae; margin of basipod and exopod spinulose. Fourth leg with a few small spines across middle of distal segments of both rami; both exopod and endopod with two spines on proximal segment, distal segments with six and four spines. Fifth leg uniramous, 2-segmented basal segment more or less globose; second segment tapering toward tip, which bears two setae.

Measurements: Length 3 mm.; carapace length 1.0 mm.; width 0.9 mm.

Male.—Unknown.

Type.—U.S.N.M. No. 88535.

Host.—A single female was taken from the gill of a sand shark, *Carcharias littoralis* (Mitchill).

Remarks.—This species differs from Wilson's *N. versicolor* (1913) and *N. atlantica* (1922) in the shape of the cephalothoracic carapace, which has no anterolateral projections, in the character of the terminal hooks of the second antenna and second maxilla, in the length and greater number of eggs in the egg strings, and in the size of the maxilliped and in the armature of its terminal hook. It differs from Wilson's (1932) *N. pallida* in the character of the fifth feet, the armature of the second maxillae, and the larger number of segments in the first antennae.

Genus LERNAEENICUS Richiardi

LERNAEENICUS LONGIVENTRIS Wilson

Lernaeenicus longiventris WILSON, Proc. U. S. Nat. Mus., vol. 53, p. 66, pl. 7, 1917.

Some females of this species were present in the bodies of some mullets, *Mugil cephalus* Linnaeus, shipped from Miami, Fla. These were not included in the summary at the beginning of this paper.

Family PSEUDOCYCNIDAE

Genus PSEUDOCYCNUS Sundevall

PSEUDOCYCNUS APPENDICULATUS Heller

Pseudocycnus appendiculatus HELLER, Reise der Osterreichischen Fregatte *Novara*, vol. 2, pt. 3, Crustacea, p. 218, pl. 22, 1865.

Three females were collected from the gills of a common bonito, *Sarda sarda* (Bloch).

Genus CYBICOLA Bassett-Smith

CYBICOLA ELONGATA, new species

FIGURE 76

Female.—Body more than nine times as long as wide, without segmentation. Head a little wider than remainder of body, with a shallow median sinus in front, rounded behind; length a little more then one-seventh of total length of body; narrower in front fourth. Thorax with lateral constrictions that separate the first two segments and swellings that indicate the third. Genital segment not distinct. Abdomen behind it not distinct, a little longer than wide. Caudal rami not so long as abdomen; tips rounded and bearing one long and two short setae.

First antenna 7-segmented; a seta on the basal segment and at least three at tip. Second antenna small, 3-segmented; terminal hook with a spine on inner margin. Mouth tube slender and conical. First maxilla with a small terminal hook and two strong setae. Second maxilla anterior to first, near base of mouth tube; small, slender, with curved terminal hook. Maxilliped enormous, covering most of ventral side of head, with lamellate outer margin on penultimate segment except where the terminal hook meets it; there it is smooth near the hook and farther proximal it is setose; a stout, short, spine at the medial base of the terminal hook. which is sharply curved.

First leg surrounded by, and first three legs associated with, lateral, finely papillose areas. First leg biramous, with a spine at the base and a spine on either side of the distal margin of the basal segment; exopod 1-segmented with four minute spines at tip; endopod uniramous, with a seta at tip; papillose area with a seta at posterior margin of disc that surrounds the appendage; another elliptical papillose area on the lateral margin of the body near the first leg. Second leg uniramous, flat, rounded at tip, with a row of striations on the lateral surface; papillose area lateral to it, oval, and larger than that with first leg. Third leg very small; the single segment with a small curved terminal hook. Fourth leg a seta that arises from a papilla.

Measurements: Length 5.3 mm.; length of head 0.7 mm.

Male.—Unknown.

Type.—U.S.N.M. No. 88538.

Host.—Three females were taken from the gills of a Spanish mackerel, *Scomberomorus maculatus* (Mitchill).

Remarks.—In his description of the genus *(Helleria) Cybicola* (1898a, p. 11; 1898b, p. 371) Bassett-Smith states that there are no fourth legs. From his figures and a comparison with my specimens my feeling is that he either overlooked the third legs or that

they were absent and he called the fourth legs the third. My species differs from his in the extent and shape of the papillose areas on the first, second, and third thoracic segments; the much longer

FIGURE 76.—*Cybicola elongata,* new species, female, *a,* Ventral view of body, *b,* first legs; *c,* second legs; *d,* third legs; *e,* fourth legs.

body; the lack of any trace of separation between the caudal rami, the abdomen, and the genital segments; and in the armature of the cephalic appendages.

Suborder LERNAEOPODOIDA

Family LERNAEOPODIDAE

Genus THYSANOTE Krøyer

THYSANOTE POMACANTHI Krøyer

Thysanote pomacanthi KRØYER, Naturh. Tidsskrift, ser. 3, vol. 2, p. 288, pl. 15, 1863.

Six females were taken from the gills of black angelfishes, *Pomacanthus arcuatus* (Linnaeus).

Order ISOPODA

Superfamily CYMOTHOIDEA

Family AEGIDAE

Genus ROCINELA Leach

ROCINELA SIGNATA Schioedte and Meinert

Rocinela signata SCHIOEDTE and MEINERT, Naturh. Tidsskrift, ser. 3, vol. 12, p. 399, pl. 13, fig. 3, 1879.

Six muttonfishes, *Lutianus analis* (Cuvier and Valenciennes), yielded one female; a sheepshead, *Archosargus probatocephalus* (Walbaum), carried another female; 6 saucer-eyed porgies, *Calamus calamus* (Cuvier and Valenciennes), carried 4 females on their gills and a male and a female in their mouths; among 14 queen triggerfishes, *Balistes vetula* Linnaeus, one carried a male on its fin and another a female on its gill. This species was the only isopod found on fishes.

Superfamily BOPYROIDEA

Family BOPYRIDAE

Genus HEMIARTHRUS

HEMIARTHRUS SCHMITTI Pearse

Hemiarthrus schmitti PEARSE, Proc. U. S. Nat. Mus., vol. 81, art. 1, p. 3, figs. 15–21, 1932.

On more than 300 alpheid shrimps, *Synalpheus brooksi* Coutière, that came from a loggerhead sponge, *Spheciospongia vesparia*

(Lamarck), 4 males were attached to 8 females that were under the abdomen of their shrimp hosts.

Genus BOPYRO Pearse

BOPYRO CHOPRAE Pearse

Bopyro choprae PEARSE, Proc. U. S. Nat. Mus., vol. 81, art. 1, p. 1, figs. 1–14, 1932.

From the gill chambers of the same shrimps mentioned under *Hemiarthrus schmitti* two females and a male were collected.

Genus LEIDYA Cornalia

LEIDYA BIMINI, new species

FIGURE 77, *a–i*

Female.—Body compressed and distorted, longer than broad. Head not deeply set in thorax, rounded in front and behind, with two large lateral, oval discs, First antenna 3-segmented; the distal segment is narrowest and bears five strong setae. Second antenna 5-segmented; distal segment narrowest and shortest. All thoracic segments distinct; first five with delicate median ventral suckers. Thoracic legs stout; terminating in short claws; four distal segments minutely spinulose. Abdomen segments all separate; pleopods slender with digitate margins.

Measurements: Length 6.7 mm.; width 4.8 mm.; length of head 1.6 mm.; width 2.0 mm.

Male.—Body slender, 3.6 times as long as wide; head one-fourteenth of total length; fourth thoracic segment slightly wider than others; 13 segments behind the head; caudal rami 0.22 total length. First four segments of thorax transversely oblong with rounded corners, the remaining segments increasingly wider posteriorly until the fourth and fifth abdominal segments, which have laterally projecting processes. The thoracic and abdominal segments have ventral processes; the first of these is nearly spherical, the next four are elongated with rounded tips, the next four are wider and triangular, and on abdominal segments 2–5 these are armed with cross or concentric ridges. The five abdominal segments have posterolateral thickenings which have definite patterns, as shown in figures 77, *c* and *d*. The anal segment is a truncated, rounded pyramid, not sharply separated from the slender caudal rami, which are without spines or setae. The second abdominal segment has irregularly branched pigment cells and the three other anterior abdominal segments show a few small rounded pigment masses. The first antennae are 3-segmented and broad. The second antennae are 7-segmented; segments decreasing from base to tip and bear 0, 1, 2, 2, 7, 0, and 5 setae.

Measurements: Length 2.5 mm.; width 0.7 mm.

Types.—Female, U.S.N.M. No. 88573; male, U.S.N.M. No. 88573.

Host.—Three females and a single male were taken from the branchial chambers of a *Pachygrapsus transversus* (Gibbes).

Remarks.—This species differs from Leidy's (1855) *Leidya distorta* from *Uca pugilator* (Bosc), the only one previously described in this genus. The female is wider, her head is shorter, thoracic legs with better defined terminal claws, and a shorter abdomen. The male differs in the shape of the head and the body segments, the character of the chitonous lateral thickenings on the abdomen, the shape of the anal segment, and the character of the ventral papillae on the thoracic and abdominal segments. Leidy states that his male had 14 body segments. I have examined specimens of males from his host and find only 13 segments posterior to the head.

Family CRYPTONISCIDAE

Genus CANCRION Giard and Bonnier

CANCRION CAROLINUS Pearse and Walker

Cancrion carolinus PEARSE and WALKER, Proc. U. S. Nat. Mus., vol. 87, p. 10, fig. 12, 1939.

From 489 mud crabs *Panopeus herbstii* H. Milne-Edwards, 12 females of this species were taken from the body cavity.

Order CIRRIPEDIA

Suborder LEPADOMORPHA

Genus OCTOLASMIS J. E. Gray

OCTOLASMIS FORRESTI (Stebbing)

Octolasmis forresti STEBBING, Ann. Mag. Nat. Hist., ser. 6, vol. 13, p. 444, pl. 15, 1894.

This barnacle was quite abundant in the gill chambers and to some extent on the mouth parts of spiny lobsters *Panulirus argus* (Latreille). Four hosts averaged about 175 each.

OCTOLASMIS UNCUS, new species

FIGURE 77, *k*

The capitulum is compressed, triangular with basal angles rounded and the tip slightly bent toward the occludent side; about three-fourths as wide as long. The occludent margin is curved, but much less than the carinal margin.

The scutum is calcified in two segments; occludent segment curved and pointed at both ends and gradually tapered; carinal segment bifid at the distal end but otherwise much like the occludent segment. Tergum large, stout and bent to form strong sharp hook on the carinal side, therefore the specific name *uncus*.

The carina is moderately curved above, strongly so near the base.

The peduncle is a little longer than the capitulum, cylindric, and wrinkled transversely.

Type.—U.S.N.M. No. 88582.

Host.—Six specimens were collected from the gill chambers of two stone crabs, *Menippe mercenaria* (Say).

Remarks.—This species differs from *Octolasmis geryonophila* Pilsbry (1907). Pilsbry's specimens in the National Museum show some variation in the hook on the tergum but in no case is it as long, as sharp, or as sharply bent as in the present species. Also the two segments of the scutum are narrower, closer together proximally, and the carinal segment is bifid distally in the present species.

OCTOLASMIS BREVIS, new species

FIGURE 77, *j*

The capitulum is compressed, more than three-fourths as wide

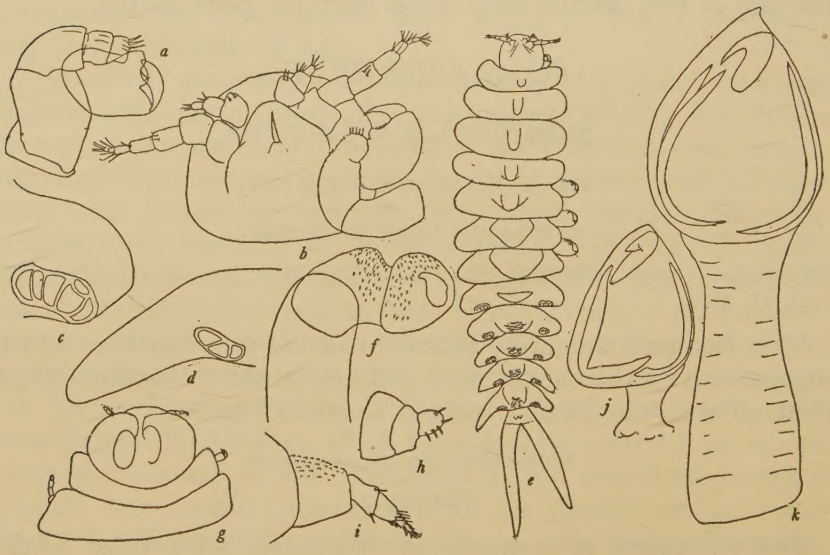

FIGURE 77.—*a–i, Leidya bimini,* new species: Male: *a,* Seventh leg; *b,* ventral view of head and left first leg; *c,* right lateral portion of first abdominal segment; *d,* left lateral portion of fifth abdominal segment; *e,* entire body of male. Female: *f,* Third leg; *g,* dorsal view of head and first two thoracic segments; *h,* first antenna; *i,* second antenna; *j, Octolasmis brevis; k, Octolasmis uncus.*

as long, and triangular. Occludent margin straighter than the carinal.

Scutum calcified in two segments; occludent segment thin, wider than the carinal, bent at an angle of less than 90°, carinal segment slender and gradually curved, flattened a little where it meets the occludent. Tergum large, slightly bifid at the proximal end, with a strong, recurved hook near its distal end; this hook about one-fourth as long as the tergum. Carina tapered and curved distally; proximal edge rather straight. Peduncle less than half as long as capitulum, nodulose and spreading proximally.

Measurements: Length 3.2–3.8 mm.; width of capitulum 1.6–2.0 mm.; length of capitulum 2.00–2.4 mm.; length of stalk 1.2 mm.

Type.—U.S.N.M. No. 88580.

Host.—From the gill chambers of 186 mud crabs *Panopeus herbstii* H. Milne-Edwards, 32 of these parasites were collected. Some of these bore ovate eggs.

Remarks.—This species resembles *O. geryonophila* Pilsbry (1907) and *O. mülleri* (Coker (1902)), but it differs from them in having a shorter peduncle, a longer and stouter hook, and a bifid proximal end on the tergum. Also the actual segments come close together and even overlap, proximally, in the present species.

LITERATURE CITED

Bassett-Smith, P. W.

1898a. New parasitic copepods found on fish at Bombay. Ann. Mag. Nat. Hist., ser. 7, vol. 1, pp. 1–17.

1898b. Some new or rare parasitic copepods found on fish in the Indo-Tropic Region. Ann. Mag. Nat. Hist., ser. 7, vol. 2, pp. 357–372.

1899. A systematic description of parasitic copepoda found on fishes, with an enumeration of known species. Proc. Zool. Soc. London, 1899, pp. 438–507.

Bere, Ruby.

1936. Parasitic copepods from Gulf of Mexico fish. Amer. Midl. Nat., vol. 17, pp. 577–625.

Burmeister, C. H. C.

1833. Beschreibung einiger neuen oder wenig bekannten Schmarotzerkrebse. Acta Acad. Caes. Leop. Carol. Nat. Cut., vol. 17, pp. 271–336.

Coker, R. E.

1902. Notes on a species of barnacle (*Dichelaspis*) parasitic on the gills of edible crabs. Bull. U. S. Fish. Comm., vol. 21, pp. 401–412.

Darwin, Charles.

1851. A monograph on the sub-class Cirripedia: The Lepadidae, xii + 400 pp., London.

Heller, C.

1868. Reise der Osterreichischen Fregatta *Novara* um die Erde in den Jahren 1857, 1858, 1859. Zoologischer Theil, vol. 2, pb. 3, Crustaceen, pp. 1–280. Wien.

KRØYER, H.
1863. Bidrag til Kundskab om Snyltekrebsene. Naturhist. Tidsskr, 1863–64, pp. 75–426.

OAKLEY, C. L.
1930. The Chondracanthidae (Crustacea: Copepoda); with a description of five new genera and one new species. Parasitology, vol. 22, pp. 182–201.

PEARSE, A. S.
1932. New bopyrid isopod crustaceans from Dry Tortugas, Florida. Proc. U. S. Nat. Mus., vol. 81, art. 1, pp. 1–6.
1947. Parasitic copepods from Beaufort, North Carolina. Journ. Elisha Mitchell Sci. Soc., vol. 63, pp. 1–16.
1948. A second report on parasitic copepods collected at Beaufort, N. C. Journ. Elisha Mitchell Sci. Soc., vol. 64, pp. 127–131.

PEARSE, A. S., and WALKER, H. A.
1939. Two new parasitic isopods from the eastern coast of North America. Proc. U. S. Nat. Mus., vol. 87, pp. 19–23.

PILSBRY, H. A.
1907. The barnacles (Cirripedia) contained in the collection of the U. S. National Museum. U. S. Nat. Mus. Bull. 60, x + 122 pp.

RICHARDSON, HARRIET.
1905. A monograph on the isopods of North America. U. S. Nat. Mus. Bull. 54, liii + 727 pp.

SCOTT, T. and A.
1913. The British parasitic Copepoda, 2 vols., ix + 254 pp., 72 pls.

STEENSTRUP, J. S., and LUTKEN, C. F.
1861. Bidrag til Kunskab om det aabne Has Snyltekrebs og Lernaeer samt om nogle andre nye eller hidtil kun ufuldstaen digt kjendte parasitiske copepoder, 92 pp. Kjobenhavn.

WILSON, CHARLES BRANCH.
1905. North American parasitic copepods belonging to the family Caligidae. Part 1.—The Caliginae. Proc. U. S. Nat. Mus., vol. 28, pp. 479–672.
1908. North American copepods belonging to the family Caligidae. Parts 3 and 4.—A revision of the Pandarinae and the Cecropinae. Proc. U. S. Nat. Mus., vol. 33, pp. 323–490.
1913. Crustacean parasites of West Indian fishes and land crabs, with description of new genera and species. Proc. U. S. Nat. Mus., vol. 44, pp. 189-277.
1917. North American parasitic copepods belonging to the Lernaeidae with a revision of the entire family. Proc. U. S. Nat. Mus., vol. 53, pp. 1–150.
1922. North American parasitic copepods belonging to the family Dichelesthiidae. Proc. U. S. Nat. Mus., vol. 60, art. 5, 100 pp.
1932. The copepods of the Woods Hole Region, Massachusetts. U. S. Nat. Mus. Bull. 158, xix + 635 pp.
1935. Parasitic copepods from the Dry Tortugas. Pap. Tortugas Lab., vol. 29, pp. 327–347.

YAMAGUTI, S.
1939. Parasitic copepods from fishes of Japan. Volum. Jubil. Prof. Sadao Yoshida, vol. 2, pt. 5, pp. 443—487.

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